Witness Responding: Michael J. Majoros, Jr.

16. Refer to the Majoros Direct Testimony, pages 12 through 14 of 40 and Exhibit MJM-7. In pages 12 and 13 of 40, Mr. Majoros makes two references to Exhibit MJM-7. Provide the specific pages in Exhibit MJM-7 referenced in pages 12 and 13 of 40.

Response:

Page 12, line 10 reference – please see Exhibit___(MJM-7), pages 3-6 of 17. Page 13, line 19 reference – please see Exhibit___(MJM-7), page 7 of 17.

Witness Responding: Michael J. Majoros, Jr.

- 17. Refer to the Majoros Direct Testimony, page 14 of 40 and Exhibit MJM-8, page 1 of 4.
 - a. Provide the basis for the following statement, "Second, it is not even clear that the net salvage that Mr. Spanos studied for the services account even relates to these types of services."
 - b. Refer to Exhibit MJM-8, page 1 of 4. Explain in detail why the apparent over-depreciation of Account 2801 should also be applied to Account 2761.

Response:

- a. Please see pages 19-21 of Mr. Majoros' testimony. Mr. Majoros provides a detailed explanation.
- b. First, Mr. Majoros is uncertain as to the use of the word "apparent." Mr. Spanos calculated these numbers, not Mr. Majoros. Second, Mr. Majoros is not proposing to apply anything to anything. He summarizes Mr. Spanos' numbers to show that collectively, the cast iron investment is overdepreciated.

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Witness Responding: Michael J. Majoros, Jr.

- 18. Refer to the Majoros Direct Testimony, pages 15 and 16 of 40 and Exhibit MJM-9.
 - a. On pages 15 and 16 of 40, Mr. Majoros makes two references to Exhibit MJM-9. Provide the specific pages in Exhibit MJM-9 referenced in pages 15 and 16 of 40.
 - b. Pages 7 and 8 of 8 of Exhibit MJM-9 appears to indicate a 70-year life for this account. However, the calculated average service life is 50.6 years. Explain why the 70 year life is more appropriate given the average service life of 50.6 years.

Response:

- a. Page 15, line 10 reference please see Exhibit___(MJM-9), page 3 of 8. Page 16, line 20 reference please see Exhibit___(MJM-9), page 4 of 9.
- b. The average service life of 50.6 shown on Exhibit___(MJM-9) is the weighted average service life resulting from the use of an 70-R1.5 curve and the ELG procedure. See response to Question No. 14.

Witness Responding: Michael J. Majoros, Jr.

19. The analysis supplied in the Majoros Direct Testimony, Exhibits MJM-5 through MJM-7 indicates that the calculation of the remaining life was based upon the "broad group/vintage group life group procedures." The depreciation study submitted by ULH&P is based on the equal life group procedure, and Mr. Majoros has accepted 23 of the 32 proposed depreciation rates contained in ULH&P's depreciation study. Would the adoption of Mr. Majoros's proposed depreciation rates result in depreciation rates determined using multiple life group procedures? Is this a desirable approach to take when establishing depreciation rates? Explain the responses.

Response:

Again, Mr. Majoros apologizes for the typographical errors in his testimony and exhibits. The reference to Broad Group/Vintage Group is in error. Mr. Majoros' remaining lives, and as such his depreciation rates, are calculated using the ELG procedure. Please see the corrected versions of the exhibits attached in response to Question No. 11.

Witness Responding: Michael J. Majoros, Jr.

20. Refer to the Majoros Direct Testimony, page 23 of 40. Explain the basis for the conclusion contained in the following statements, "Notice that the liability increased by \$3 million in one year. That is the amount that ULH&P collected from ratepayers, over and above its actual removal costs in 2004."

Response:

The regulatory liability discussed on page 23 of Mr. Majoros' testimony relates to accruals for cost of removal which have not yet been spent. According to page 131 of ULH&P's 2004 10K Report:

CG&E's transmission and distribution business, PSI and ULH&P ratably accrue the estimated retirement and removal cost of rate regulated property, plant and equipment when removal of the asset is considered likely, in accordance with established regulatory practices. The accrued, but not incurred, balance for these costs is classified as *Regulatory liabilities*, under Statement 71, as previously disclosed in (c).¹

The regulatory liability increased from \$27 million to \$30 million, i.e., by \$3 million during 2004. As explained by the Company, the increase in the regulatory liability from year to year is related to collections for cost of removal, over and above what has been spent. This issue is not a matter of debate, it is a fact.

¹ ULH&P December 31, 2004 10K Report, page 131, Notes to Financial Statements - (j) Asset Retirement Obligations and Accrued Cost of Removal.

Witness Responding: Michael J. Majoros, Jr.

21. Refer to the Majoros Direct Testimony, page 31 of 40. Has Mr. Majoros conducted a study or reviewed studies discussing the likelihood of electric restructuring in Kentucky? Explain the response.

Response:

No. However, subsequent to filing this testimony, Mr. Majoros also has concluded that even the possibility of an alternative form of regulation might provide the basis for ULH&P to take the regulatory liability into income. That is what the telephone industry did. The issue is that the money is at risk. The Commission can provide some protection on behalf of ratepayers by recognizing the regulatory liability.

Witness Responding: Michael J. Majoros, Jr.

- 22. Refer to the Majoros Direct Testimony, pages 34 through 36 of 40.
 - a. Refer to page 34 of 40. On line 26 is the statement, "Experience indicates that it is highly unlikely that these amounts will be spent for cost of removal in the magnitude that they have been collected." Provide the basis for this statement, including any analysis Mr. Majoros has performed using ULH&P-specific data.
 - b. Refer to page 35 of 40. On line 1 is the statement, "[I]t is fair and reasonable for the Kentucky PSC to specifically recognize the ratepayers' security interest in these monies until they are actually spent on their intended purpose." Explain the basis for the statement that ratepayers have a "security interest" in cost of removal incorporated into depreciation rates.
 - c. Refer to page 36 of 40. On line 4 is the statement, "However, in recognition of prior KPSC Orders, I recommend that the regulatory liability be specifically identified as a refundable component of accumulated depreciation." Specifically identify the Commission Orders referenced in this statement.

Response:

- a. See Exhibit___(MJM-13) where Mr. Majoros explains TIFCA. The amounts will not be expended for cost of removal in the magnitude they have been collected because they are based on inflated estimates, and applied to ever-increasing plant balances, which increase as a result of growth and modernization, both of which are also subject to inflation. Again, this is a factual issue.
- b. Mr. Majoros was harkening back to his college days when he took business law. See Mr. Majoros' response to ULH&P Question No. 46, attached.
- c. See page 37, line 15 to page 38, line 10 of Mr. Majoros' testimony.

Witness Responding: Dr. J. Randall Woolridge

23. Refer to the Direct Testimony of Dr. J. Randall Woolridge ("Woolridge Direct Testimony"), page 3. Dr. Woolridge states that the benchmark for long-term capital costs is the rate on 10-year Treasury Bonds. Explain why the benchmark is 10-year bonds rather than 20-year bonds.

Response:

It is Dr.Woolridge's opinion that the 10-year Treasury has become the benchmark for long-term capital costs. The 10-year yield seems to get the most attention in the financial press. Below are several opinions regarding the importance of the 10-year yield.

The Street.Com: Treasury Bonds

(www.thestreet.com/tsc/basics/ tscglossary/Treasury_Securities.html)

The 10-year note is the U.S. benchmark, meaning that people look to its yield as a proxy for all U.S. interest rates. Formerly, that honor went to the 30-year bond. But reduced issuance of 30-year bonds has given them scarcity value, making them less reliable as an indicator of how high people think interest rates should be. (30-year bond sometimes trades like commodities.)

Recession Telltale

(www.forbes.com/forbes/2000/1113/6613388a_print.html)

That bellowing you hear from the bulls would have you believe that this time it's different, that the inversion is really a chimera produced by the shortage of long Treasury bonds. Indeed, the 30-year yield has fallen 20 basis points since the Fed started its rate-raising campaign. Moody's, Merrill Lynch and other major Wall Street powers assume the long bond is going the way of the passenger pigeon and have switched to the 10-year Treasury as their benchmark.

Goldman Sachs Sees 10 year note as its government debt benchmark (www.bradynet.com/bbs/us/100004-0.html)

2000 Feb, NEW YORK, Feb 9 (Reuters) – With the U.S. Treasury Department buying back benchmark 30-year bonds and cutting back on new issuance of long bonds, investment bank Goldman Sachs said on Wednesday it would now use the Treasury 10-year note as its government debt benchmark to gauge appropriate prices and yields on other types of securities.

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Witness Responding: Dr. J. Randall Woolridge

24. Refer to the Woolridge Direct Testimony, page 5. Provide a copy of Jeremy J. Siegel's article referenced in footnote 1.

Response:

The requested article is provided on the CD labeled as bb PSC-I-24A.

The Shrinking Equity Premium

Historical facts and future forecasts.

Jeremy J. Siegel

ew conundrums have caught the imagination of economists and practitioners as much as the "Equity Premium Puzzle," the title chosen by Rajneesh Mehra and Edward Prescott for their seminal 1985 article in the *Journal of Monetary Economics*. Mehra and Prescott show that the historical return on stocks has been too high in relation to the return on risk-free assets to be explained by the standard economic models of risk and return without invoking unreasonably high levels of risk aversion. They calculate the margin by which stocks outperformed safe assets — the equity premium — to be in excess of 6 percentage points per year, and claim that the profession is at a loss to explain its magnitude.

There have been many attempts since to explain the size of the equity premium by variations of the standard finance model. I shall not enumerate them here, but refer readers to reviews by Abel [1991], Kocherlakota [1996], Cochrane [1997], and Siegel and Thaler [1997].

I review here the estimates of the equity premium derived from historical data, and offer some reasons why I believe that most of the historical data underestimate the real return on fixed-income assets and overestimate the expected return on equities. I shall also offer some reasons why, given the current high level of the stock market relative to corporate earnings, the forward-looking equity premium may be considerably lower than the historical average.

REAL RETURNS ON "RISK-FREE" ASSETS

From 1889 through 1978, Mehra and Prescott estimate the real return on short-dated fixed-income

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assets (commercial paper until 1920 and Treasury bills thereafter) to have been 0.8%. In 1976 and again in 1982, Roger Ibbotson and Rex Sinquefield formally estimated the real risk-free rate to be even lower — at zero, based on historical data analyzed from 1926. This extremely low level of the short-term real rate is by itself puzzling, and has been termed the "real rate puzzle" by Weil [1989]. The essence of this puzzle is that, given the historical growth of per capita income, it is surprising that the demand to borrow against tomorrow's higher consumption has not resulted in higher borrowing rates.

The low measured level of the risk-free rate may in fact be in part an artifact of the time period examined. There is abundant evidence that the real rate both during the nineteenth century and after 1982 has been substantially higher. Exhibit 1, based on Siegel [1998], indicates that over the entire period from 1802 through 1998, the real compound annual return on Treasury bills (or equivalent safe assets) has been 2.9%, while the realized return on long-term government bonds has been 3.5%. Exhibit 2 presents the historical equity premium

EXHIBIT 1 COMPOUND ANNUAL REAL RETURNS (%) U.S. DATA, 1802-1998

	Stocks	Bonds	Bills	Gold	Inflation
1802-1998	7.0	3.5	2.9	-0.1	1.3
1802-1870	7.0	4.8	5.1	0.2	0.1
1871-1925	6.6	3.7	3.2	-0.8	0.6
1926-1998	7.4	2.2	0.7	0.2	3.1
1946-1998	7.8	1.3	0.6	-0.7	4.2

Source: Siegel [1998] updated.

for selected time periods for both bonds and bills based on the same data.²

The danger of using historical averages — even over long periods — to make forecasts is readily illustrated by noting Ibbotson and Sinquefield's long-term predictions made in 1976 and again in 1982 on the basis of their own analysis of the historical data. In 1976, they made predictions for the twenty-five-year period from

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EXHIBIT 2
EQUITY PREMIUMS (%) — U.S. DATA, 1802-1998

	Equity Premium with Bonds		Equity Premium with Bills	
	Geometric	Arithmetic	Geometric	Arithmetic
1802-1998	3.5	4.7	5.1	5.5
1802-1870	2.2	3.2	1.9	2.9
1871-1925	2.9	4.0	3.4	4.6
1926-1998	5.2	6.7	6.7	8.6
1946-1998	6.5	7.3	7.2	8.6

Source: Siegel [1998] updated

1976 through 2000, and in 1982 they made predictions for the twenty-year period from 1982 through 2001. Their forecasts are shown in Exhibit 3. Since we now have data for most of these forecast periods, it is of interest to assess their estimates.

The last two decades have been extremely good for financial assets, so it is not surprising that Ibbotson and Sinquefield underestimate all their real returns. But their most serious underestimation is for fixed-income assets, where they forecast the real bill rate to average essentially zero and the real return on bonds to be less than 2%. Given the standard deviation of estimates, realized annual real bond and bill returns have been 9.9% and 2.9%, respectively, significantly above their estimates. Since negative real returns on fixed-income assets persisted between the two surveys, Ibbotson and Sinquefield more seriously underestimate long-term real bill rates in their 1982 forecasts than they did in 1976.

My purpose here is not to highlight errors in Ibbotson's and Sinquefield's past forecasts. Their analysis was state-of-the-art, and their data have rightly

EXHIBIT 3
LONG-TERM FORECASTS OF REAL RETURNS —
COMPOUND ANNUAL RATES OF RETURN

Forecast Pe	riod	Stocks	Bonds	Bills	Inflation
1976-2000	Forecast	6.3 (23.5)	1.5 (8.0)	0.4 (4.6)	6.4 (4.8)
	Actual*	11.0	53	2.1	4.8
1982-2001	Forecast	7.6 (21.9)	1.8 (8.3)	0.0(4.4)	12.8 (5.1)
	Actual*	14.6	9.9	2.9	3.3

Data through 1998.

Standard deviations of annual returns in parentheses Source: Ibbotson and Sinquefield [1976, 1982].

formed the benchmark for the risk and return estimates used by both professional and academic economists. I bring these forecasts to light to show that even the fifty-year history of financial returns available to economists at that time was insufficient to estimate future real fixed-income returns.

It is not well understood why the real rate of returns on fixed-income assets was so low during the 1926-1980 period. The bursts of unanticipated inflation following the end of World War II and during the 1970s certainly had a negative effect on the realized real returns from long-term bonds. Perhaps the shift from a gold standard to a paper monetary standard had a negative effect on these real returns until investors fully adjusted to the inflationary bias inherent in the new monetary standard.⁴

Whatever the reasons, the current yields on the Treasury inflation-protected securities, or TIPS, first issued in 1997 support the assertion that the future real returns on risk-free assets will be substantially above the level estimated over the Ibbotson-Sinquefield period. This is so even when the estimating period includes the higher real rates of the past two decades. In August 1999, the ten- and thirty-year TIPS bond yielded 4.0%, nearly twice the realized rate of return on long-dated government bonds over the past seventy-five years.⁵

The market projects real returns on risk-free assets to be substantially higher in the future than they have been over most of this century. It is also likely that the expected returns in the past are substantially greater than they have turned out ex post, especially for longer-dated securities. If one uses a 3.5% real return on fixed-income assets, the geometric equity premium for a 7.0% real stock return falls to 3.5%.

HISTORICAL EQUITY RETURNS AND SURVIVORSHIP BIAS

The real return on stocks, as I have emphasized [1998], has displayed a remarkable long-term stability. Over the entire 196-year period that I examine, the long-term after-inflation geometric annual rate of return on equity averages 7.0%. In the 1926–1998 period, the real return has been 7.4%, and since 1946 (when virtually all the thirteenfold increase in the consumer price index over the past two hundred years has taken place) the real return on equity has been 7.8%. The relative stability of long-term real equity returns is in marked contrast to the unstable real returns on fixed-income assets.

Some economists believe the 7% historical real

return on equities very likely overstates the true expected return on stocks. They claim that using the expost equity returns in the United States to represent returns expected by shareholders is misleading. This is because no investor in the nineteenth or early twentieth century could know for certain that the United States would be the most successful capitalist country in history and experience the highest equity returns.

This "survivorship bias" hypothesis, as it has been called, is examined by Jorion and Goetzmann [1999] in "Global Stock Markets in the Twentieth Century." They conclude that of thirty-nine equity markets that existed in 1921, none of them show as high a real capital appreciation as the United States, and most of them have had substantial disruptions in their operations or have disappeared altogether. They report that the median real capital appreciation of non-U.S. markets has been only 0.8% per year as opposed to 4.3% in the U.S.⁶

But this evidence may be misleading. Total returns of a portfolio, especially over long periods of time, are a very non-linear function of the returns of the individual components. Mathematically it can be shown that if individual stock returns are lognormal, the performance of the *median* stock is almost always worse than the market portfolio performance.⁷

So, it is not surprising that the median performance of individual countries will not match the "world portfolio" or the returns in the dominant market. Jorion and Goetzmann recognize this near the end of their study when they show that compound annual real return on a GDP-weighted portfolio of equities in all countries falls only 28 basis points short of the U.S. return. In fact, because of the real depreciation of the dollar over this time, the compound annual dollar return on a GDP-weighted world is actually 30 basis points higher than the return on U.S. equities.⁸

But examining international stock returns alone does not give us a better measure of the equity premium. The equity premium measures the difference between the returns on stocks and safe bonds. Although stock returns may be lower in foreign countries than the U.S., the real returns on foreign bonds are substantially lower. Almost all disrupted markets experienced severe inflation, in some instances wiping out the value of fixed-income assets. (One could say that the equity premium in Germany covering any period including the 1922-1923 hyperinflation is over 100%, since the real value of fixed-income assets fell to zero while equities did not.)

Even investors who purchased bonds that

promised precious metals or foreign currency experienced significant defaults. It is my belief that if one uses a world portfolio of stocks and bonds, the equity *premium* will turn out higher, not lower, than found in the U.S.

TRANSACTION COSTS AND DIVERSIFICATION

I believe that 7.0% per year does approximate the long-term real return on equity indexes. But the return on equity *indexes* does not necessarily represent the *realized* return to the equityholder. There are two reasons for this: transaction costs and the lack of diversification.

Mutual funds and, more recently, low-cost "index funds" were not available to investors of the nine-teenth or early twentieth century. Prior to 1975, brokerage commissions on buying and selling individual stocks were fixed by the New York Stock Exchange, and were substantially higher than today. This made the accumulation and maintenance of a fully diversified portfolio of stocks quite costly.

The advent of mutual funds has substantially lowered the cost of maintaining a diversified portfolio. And the cost of investing in mutual funds has declined over the last several decades. Rea and Reid [1998] report a decline of 76 basis points (from 225 to 149) in the average annual fee for equity mutual funds from 1980 to 1997 (see also Bogle [1999, p. 69]). Index funds with a cost of less than 20 basis points per year are now available to small investors.

Furthermore, the risk experienced by investors unable to fully diversify their portfolios made the risk-return trade-off less desirable than that calculated from stock indexes. On a risk-adjusted basis, a less-than-fully diversified portfolio has a lower expected return than the total market.

Given transaction costs and inadequate diversification, I assume that equity investors experienced real returns more in the neighborhood of 5% to 6% over most of the nineteenth and twentieth century rather than the 7% calculated from indexes. Assuming a 3.5% real return on bonds, the historical equity premium may be more like 1.5 to 2.5 percentage points, rather than the 6.0 percentage points recorded by Mehra and Prescott.

PROJECTING FUTURE EQUITY RETURNS

Future stock returns should not be viewed independently of current fundamentals, since the price of

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stocks is the present discounted value of all expected future cash flows. Earnings are the source of these cash flows, and the average price-to-earnings (P-E) ratio in the U.S. from 1871 through 1998 is 14 (see Shiller [1989] for an excellent source for this series).

Using data from August 13, 1999, the S&P 500 stock index is 1327, and the mean 1999 estimate for operating earnings of the S&P 500 stock index of fifteen analysts polled by Bloomberg News is \$48.47. ¹¹ This yields a current P-E ratio on the market of 27.4. But due to the increased number of write-offs and other special charges taken by management over the last several years, operating earnings have exceeded total earnings by 10% to 15%. ¹² On the basis of reported earnings, which is what most historical series report (including Shiller's), the P-E ratio of the market is currently about 32. ¹³

There are two long-term consequences of the high level of stock prices relative to fundamentals. Either 1) future stock returns are going to be lower than historical averages, or 2) earnings (and hence other fundamentals such as dividends or book value) are going to rise at a more rapid rate in the future. A third possibility, that P-E ratios will rise continually without bound, is ruled out since this would cause an unstable bubble in stock prices that must burst.

If future dividends grow no faster than they have in the past, forward-looking real stock returns will be lower than the 7% historical average. As is well known from the dividend discount model, the rate of return on stocks can be calculated by adding the current dividend yield to the expected rate of growth of future dividends. The current dividend yield on the S&P 500 index is 1.2%. Since 1871, the growth of real per share dividends on the index has been 1.3%, but since 1946, due in part to a higher reinvestment rate, growth has risen to 2.1%. If we assume future growth of real per share dividends to be close to the most recent average of 2.1%, we obtain a 3.3% real return on equities, less than one-half the historical average.

A second method of calculating future real returns yields a similar figure. If the rate of return on capital equals the return investors require on stocks, the earnings yield, or the reciprocal of the price-earnings ratio, equals the forward-looking real long-term return on equity (see Phillips [1999] for a more formal development of this proposition). Long-term data support this contention; a 14 price-to-earnings ratio corresponds to a 7.1% earnings yield, which approximates the long-term real return on equities. The current P-E ratio on the S&P 500 stock

index is between 27 to 32, depending on whether total or operating earnings are considered. This indicates a current earnings yield, and hence a future long-term and real return, of between 3.1% to 3.7% on equities.

One way to explain these projected lower future equity returns is that investors are bidding up the price of stocks to higher levels as the favorable historical data about the risks and returns in the equity market become incorporated into investor decisions. ¹⁴ Lower transaction costs further enable investors to assemble diversified portfolios of stocks to take advantage of these returns. The desirability of stocks may be further reinforced by the perception that the business cycle has become less severe over time and has reduced the inherent risk in equities. ¹⁵

If these factors are the cause of the current bull market, then the revaluation of equity prices is a one-time adjustment. This means that future expected equity returns should be lower, not higher, than in the past. During this period of upward price adjustment, however, equity returns will be higher than average, increasing the historical measured returns in the equity market.

This divergence between increased historical returns and lower future returns could set the stage for some significant investor disappointment, as survey evidence suggests that many investors expect future returns to be higher, not lower, than in the past (see "PaineWebber Index of Investor Optimism" [1999]).

SOURCES OF FASTER EARNINGS GROWTH

Although the increased recognition of the risks and returns to equity may be part of the explanation for the bull market in stocks, there must be other reasons. This is because the forward-looking rates of return we derive for equities fall below the current 4.0% yield on inflation-protected government bonds. Although one could debate whether in the long run stocks or *nominal* bonds are riskier in real terms, there should be no doubt that the inflation-protected bonds are safer than equities and should have a lower expected return.

Hence, some part of the current bull market in stocks must be due to the expectations that future earnings (and dividend) growth will be significantly above the historical average. Optimists frequently cite higher growth of real output and enhanced productivity, enabled by the technological and communications revolution, as the source of this higher growth. Yet the long-run relation between the growth of real output and *per share* earn-

4 THE SHRINKING EQUITY PREMIUM

ings growth is quite weak on both theoretical and empirical grounds. Per share earnings growth has been primarily determined by the reinvestment rate of the firm, or the earnings yield minus the dividend yield, not the rate of output growth. ¹⁶

The reason why output growth does not factor into per share earnings growth is that new shares must be issued (or debt floated) to cover the expansion of productive technology needed to increase output. Over the long run, the returns to technological progress have gone to workers in the form of higher real wages, while the return per unit of capital has remained essentially unchanged. Real output growth could spur growth in per share earnings only if it were "capital-enhancing," in the growth terminology, which is contrary to the labor-augmenting and wage-enhancing technological change that has marked the historical data (see Diamond [1999] for a discussion of growth and real return).

But there are factors that may contribute to higher future earnings growth of U.S. corporations, at least temporarily. The United States has emerged as the leader in the fastest-growing segments of the world economy: technology, communications, pharmaceuticals, and, most recently, the Internet and Internet technology. Furthermore, the penetration of U.S. brand names such as Coca-Cola, Procter & Gamble, Disney, Nike, and others into the global economy can lead to temporarily higher profit growth for U.S. firms.

Nonetheless, the level of corporate earnings would have to double to bring the P-E ratio down to the long-term average, or to increase by 50% to bring the P-E ratio down to 20. A 20 price-to-earnings yield corresponds to a 5% earnings yield or a 5% real return, a return that I believe approximates realized historical equity returns after transaction costs are subtracted. For per share earnings to temporarily grow to a level 50% above the long-term trend is clearly possible in a world economy where the U.S. plays a dominant role, but it is by no means certain.

CONCLUSION

The degree of the equity premium calculated from data estimated from 1926 is unlikely to persist in the future. The real return on fixed-income assets is likely to be significantly higher than that estimated on earlier data. This is confirmed by the yields available on Treasury inflation-linked securities, which currently exceed 4%. Furthermore, despite the acceleration in earnings

growth, the return on equities is likely to fall from its historical level due to the very high level of equity prices relative to fundamentals.¹⁷

All of this makes it very surprising that Ivo Welch [1999] in a survey of over 200 academic economists finds that most estimate the equity premium at 5 to 6 percentage points over the next thirty years. Such a premium would require a 9% to 10% real return on stocks, given the current real yield on Treasury inflation-indexed securities. This means that real per share dividends would have to grow by nearly 8.0% to 9.0% per year, given the current 1.2% dividend yield, to prevent the P-E ratio from rising farther from its current record levels. This growth rate is more than six times the growth rate of real dividends since 1871 and more than triple their growth rate since the end of World War II.

Unless there is a substantial increase in the productivity of capital, dividend growth of this magnitude would mean an ever-increasing share of national income going to profits. This by itself might cause political ramifications that could be negative for shareholders.

ENDNOTES

This article is adapted from a paper delivered at the UCLA Conference, "The Equity Premium and Stock Market Valuations," and a Princeton Center for Economic Policy Studies Conference, "What's Up with the Stock Market?" both held in May 1999. The author thanks participants in these seminars and particularly Jay Ritter, Robert Shiller, and Peter L. Bernstein for their comments

¹A few economists believe these high levels of risk aversion are not unreasonable; see, e.g., Kandel and Stambaugh [1991].

²In the capital asset pricing model, equity risk premiums are derived from the *arithmetic* and not geometric returns. Compound annual geometric returns are almost universally used in characterizing long-term returns.

³Their wildly high 12.8% long-term inflation estimate in 1982 is derived by subtracting their low historical real yield from the high nominal bond rate. This overprediction has no effect on their estimated *real* returns.

⁴But real rates on *short-dated* bonds, for which unanticipated inflation should have been less important, were also extremely low between 1926 and 1980.

⁵I am very persuaded by the research of Campbell and Viceira [1998], who argue that in a multiperiod world the proper risk-free asset is an inflation-indexed annuity rather than the short-dated Treasury bill. This conclusion comes from intertemporal models where agents desire to hedge against unanticipated changes in the real rate of interest. The duration of such an indexed annuity is closely approximated by the ten-year inflation-indexed bonds.

⁶They are unable to construct dividend series for most foreign countries, but they make a not-unreasonable assumption that dividend yields in the U.S. were at least as high as abroad.

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Intuitively, the return of the winners more than compensates for the lower returns of the more numerous losers.

*Furthermore, the dollar return on the foreign portfolio is much better measured than the real return. These data are taken from Jorion and Goetzmann [1991], Tables VI and VII.

"To avoid the problems with default, gold is considered the "risk-free" alternative in many countries. But gold's long-term real returns are negative in the U.S. even before one considers storage and insurance costs. And precious metals are far from risk-free in real terms. The real return on gold since 1982 has been a negative 7% per year.

 $^{10}\mathrm{I}$ abstract from taxes, which reduce the return on both bonds and stocks.

¹¹These data were taken from the Bloomberg terminal on August 16, 1999.

¹²From 1970 through 1989, operating earnings exceeded reported earnings by an average of 2.29%. Since 1990, the average has been 12.93%.

¹There are other factors that distort reported earnings, some upward (underreporting option costs: see Murray, Smithers, and Emerson [1998]) and some downward (overexpensing R&D; see Nakamura [1999]). No clear bias is evident.

¹¹This is particularly true on a long-term, after-inflation basis. See Siegel [1998, Chapter 2]

15Bernstein [1998] has emphasized the role of economic stability in stock valuation. Also see Zarnowitz [1999] and Romer [1999]. Other reasons given for the high price of equities rely on demographic factors, specifically the accumulations of "baby boomers." This should, however, reduce both stock and bond returns, yet we see real bond returns as high if not higher than historically.

¹⁶From 1871 to 1998, the growth of real per share earnings is only 1.7% per year, slightly less than obtained by subtracting the median dividend yield of 4.8% from the median earnings yield of 7.2%.

¹⁷This should not be construed as predicting that equity prices need fall significantly, or that the expected returns on equities are not higher, even at current levels, than those on fixed-income investments.

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FALL 1999

Siegel, Jeremy J., and Richard Thaler. "Anomalies: The Equity Premium Puzzle." *Journal of Economic Perspectives*, 11, 1 (Winter 1997), pp. 191-200.

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Witness Responding: Dr. J. Randall Woolridge

25. Refer to the Woolridge Direct Testimony, page 6. Provide a copy of the Alan Greenspan speech referenced in footnote 2.

Response:

The requested article is provided on the CD labeled as bb PSC-I-25A.

Greenspan Speech, October 14, 1999

There can be little doubt that the dramatic improvements in information technology in recent years have altered our approach to risk. Some analysts perceive that information technology has permanently lowered equity premiums and, hence, permanently raised the prices of the collateral that underlies all financial assets.

The reason, of course, is that information is critical to the evaluation of risk. The less that is known about the current state of a market or a venture, the less the ability to project future outcomes and, hence, the more those potential outcomes will be discounted.

The rise in the availability of real-time information has reduced the uncertainties and thereby lowered the variances that we employ to guide portfolio decisions. At least part of the observed fall in equity premiums in our economy and others over the past five years does not appear to be the result of ephemeral changes in perceptions. It is presumably the result of a permanent technology-driven increase in information availability, which by definition reduces uncertainty and therefore risk premiums. This decline is most evident in equity risk premiums. It is less clear in the corporate bond market, where relative supplies of corporate and Treasury bonds and other factors we cannot easily identify have outweighed the effects of more readily available information about borrowers.

The marked increase over this decade in the projected slope of technology advance, of course, has also augmented expectations of earnings growth, as evidenced by the dramatic increase since 1995 in security analysts' projections of long-term earnings. While it may be that the expectations of higher earnings embodied in equity values have had a spillover effect on discount factors, the latter remain essentially independent of the earnings expectations themselves.

That equity premiums have generally declined during the past decade is not in dispute. What is at issue is how much of the decline reflects new, irreversible technologies, and what part is a consequence of a prolonged business expansion without a significant period of adjustment. The business expansion is, of course, reversible, whereas the technological advancements presumably are not.

Witness Responding: Dr. J. Randall Woolridge

- 26. Refer to the Woolridge Direct Testimony, page 8 and Exhibit JRW-3.
- a. Provide copies of the pages from the *Value Line Investment Survey* and *C. A. Turner Utility Reports* used to develop JRW-3.
- b. Explain why companies such as Atmos Energy Corp., Keyspan Corp., NICOR, Inc., Peoples Energy Corp. and WGL Holdings, Inc., all with operating revenues in excess of \$1.8 billion and net plant in excess of \$1.9 billion, are good proxy companies for ULH&P.
- c. Explain why companies were not excluded if involved in merger activity.

Response:

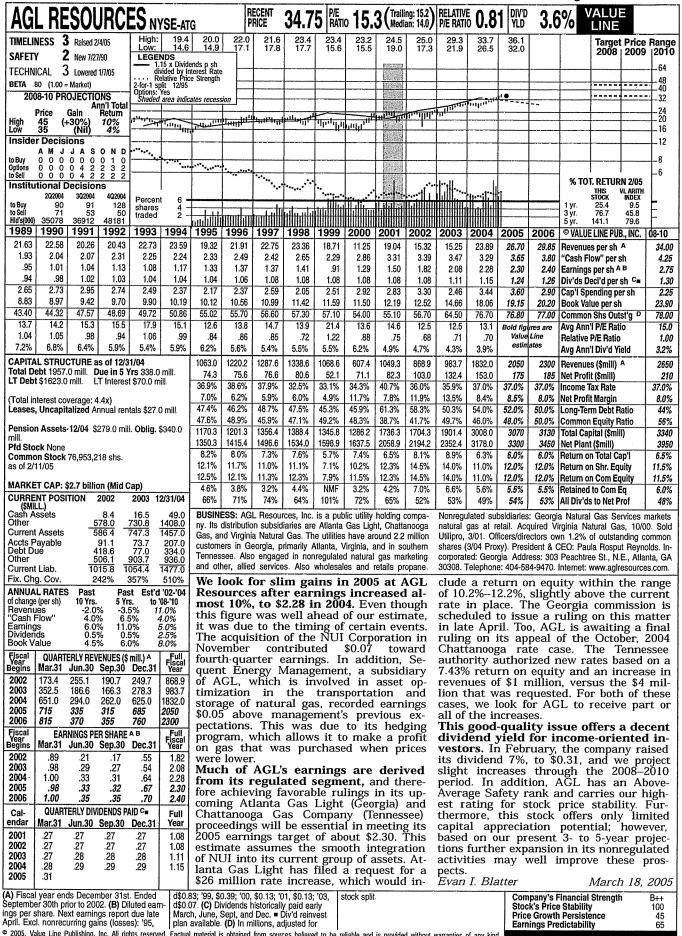
- a. The requested material is provided on the CD labeled as bb PSC-I-26A.
- b. The Value Line industry groupings, such as for the Natural Gas Distribution industry, are well recognized. In developing a proxy group, I wanted to have a recognized group of companies, primarily in the gas distribution business, which was sufficiently large in number. Furthermore, I am unaware of any studies that indicate differences in risk in gas distribution companies on the basis of size.
- c. Merger and acquisition activity is ongoing, and the prices paid reflect the expected returns available to the buyer of the business.

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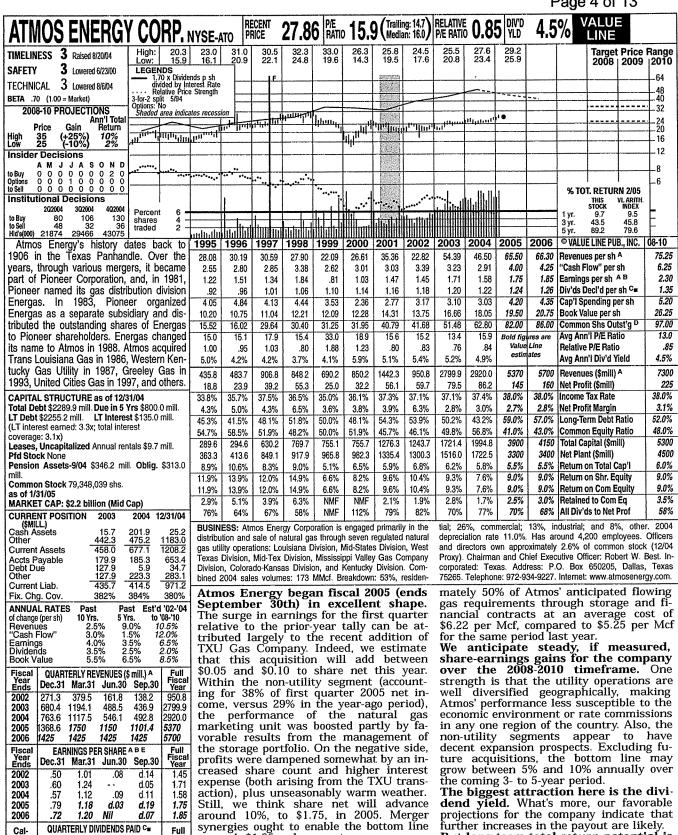
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			COMPANY	AUD RESOURCES INC. (N.Y.SE-A.T.G.) Atmos Energy Corporation (N.Y.SE-A.T.O.)	Cascade Natural Gas Corporation (NYSE-CGC)	Chesapeake Utilities Corporation (NYSE-CPK)	Delta Natural Gas Company (NDQ-DGAS)	El Paso Corporation (NYSE-EP)	Energen Corporation (141 SE-EGIN) Energy West Incommeted (NDO-FWST)	EnergySouth, Inc. (NDO-ENSI)	equitable Resources, Inc. (NYSE-EQT)	KeySpan Corp. (NYSE-KSE)	Kinder Morgan, Inc. (NYSE-KMI)	Laclede Group, Inc. (NYSE-LG)	National Fuel Gas Company (NYSE-NFG)	New Jersey Resources Corp. (NYSE-NJR)	NICUK Inc. (NYSE-GAS)	NOTHWEST NATITED CAS CO. (N TOE-N WN) ONFOK Inc. (NYSE-OKF)	Peoples Energy Corporation (NYSE-PGL)	Picdmont Natural Gas Co., Inc. (NYSE-PNY)	Questar Corporation (NYSE-STR)	RGC Resources, Inc. (NDQ-RGCO)	SEMCO Energy, Inc. (NYSE-SEN)	South Jersey industries, Inc. (NYSE-SJI)	Southwest Gas Company (N I SE-SUG)	Southwestern Frency Commany (NVSE-SWA)	JGI Corporation (NYSE-UGI)	WGL Holdings, Inc. (NYSE-WGL)	Williams Companies, Inc. (NYSE-WMB)	AVERAGE

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(A) Fiscal year ends Sept. 30th. (B) Diluted shrs. Excl. nonrec. items: '97, d53¢; '99, d23¢; '00, 12¢; '03, d17¢. Next egs. rpt. due early May. (C) Dividends historically pald in early

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.30

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QUARTERLY DIVIDENDS PAID C=

Jun.30 Sep.30 Dec.31

.29

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.30

.305

Full

Year

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1.23

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Cal-

endar

2001

2002

2003

2004

Mar.31

.29

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.305

March, June, Sept., and Dec.

Div. reinvestment plan. (3% discount). Direct stock purchase plan avail. (D) In millions, adjusted for stock splits. (E) Qtrs may not add due to

to reach \$1.85 a share next year.

Gas supply hedges should protect re-

sults, to a certain extent, against pos-

sible sharp increases in natural gas prices during the 2004-2005 heating

season. Management is covering approxi-

Company's Financial Strength Stock's Price Stability B₊ Price Growth Persistence Earnings Predictability 30 55

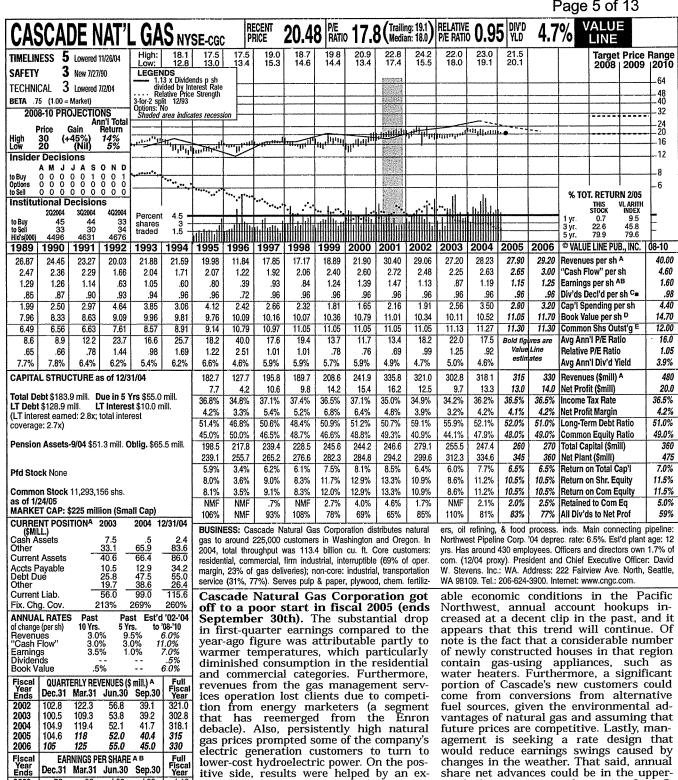
further increases in the payout are likely.

But long-term total-return potential is

unimpressive, since these shares are trading within our 2008-2010 Target Price Range. Too, they're ranked just 3 (Average) for Timeliness.

Frederick L. Harris, III

March 18, 2005



| 2405 | 24 | (A) Cal. yr. thru. 12/95. Changed to 9/30 fiscal yr. in '96. (B) Primary egs. thru. '97, then diluted. Excl. nonrec. gains (losses): '91, 19¢; '93, 3¢; '96, (11¢); '98, (2¢); '99, (1¢); '01, 9¢;

.67

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QUARTERLY DIVIDENDS PAID C.

Jun.30 Sep.30

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Mar.31

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'02, (16¢); '03, (5¢). '04 egs. don't add to total due to rounding. Next egs. rpt. due late April. (C) Dividends historically paid in the middle of Feb., May, Aug., Nov. •Div'd reinvest. plan

tioned negatives abate.

panded customer base and expense-

containment efforts. Nevertheless, it ap-

pears that 2005 share net will be moder-

ately lower or just in line with last year's

tally. But we think the bottom line may

bounce back some next year, assuming, of

course, that one or more of the aforemen-

We are positive about the company's

operating performance prospects out to 2008-2010. Thanks to generally favor-

(D) Incl. deferred charges. In '04: \$21.4 mill., \$1.90/sh. (E) In mill., adj. for stk. split.

year period.

earnings to date.

Frederick L. Harris, III

Company's Financial Strength
Stock's Price Stability
Price Growth Persistence
Earnings Predictability

70

single-digit range over the coming 3- to 5-

These shares offer a healthy dividend

yield. But we anticipate little or no

growth in the distribution, as cash flows

are utilized to meet the needs of an ex-

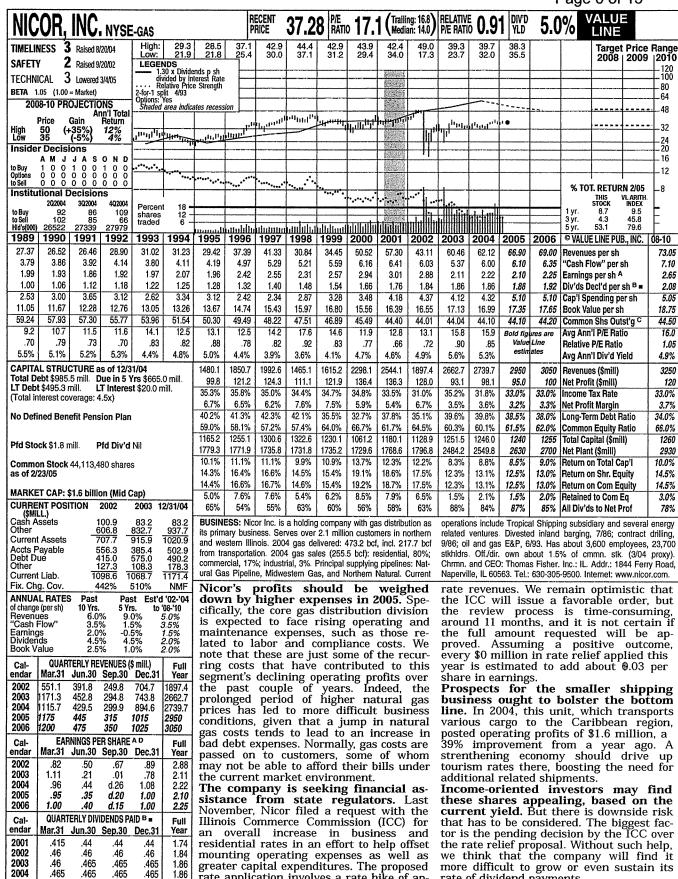
panding customer base. Meanwhile, these shares hold a 5 (Lowest) rank for Timeli-

ness, arising from the gas company's weak

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March 18, 2005



(A) Based on primary earnings thru '96, then diluted. Excl. nonrecurring gains/(loss): '99, 7¢; '97, 6¢; '98, 11¢; '99, 5¢; '00, (\$1.96); '01, 16¢; '03, (27¢); '04, (52¢). Excl. items from discon-

465

2005

tinued ops.: '93, 4¢; '96, 30¢. Next earnings report due late April. (B) Dividends historically paid early February, May, August, November.

Dividend reinvestment plan available.

rate application involves a rate hike of ap-

proximately \$3 million or 16.5% of base

(C) In millions, adjusted for stock split. (D) 2002 quarters don't add due to change in shares outstanding

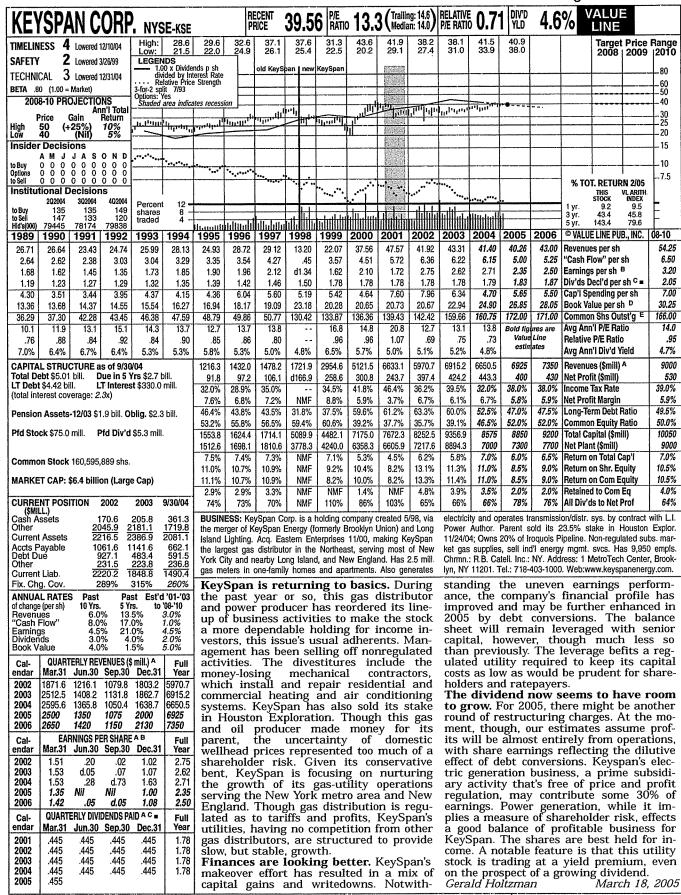
Company's Financial Strength Stock's Price Stability Price Growth Persistence **Earnings Predictability**

rate of dividend payments.

Charles W. Noh

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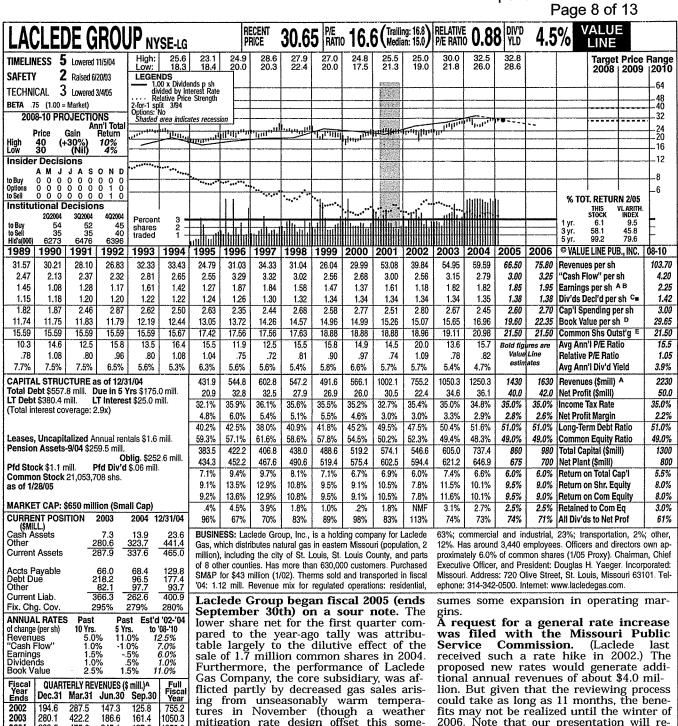
March 18, 2005



(A) Data for former KeySpan Energy through '96, \$0.52; '97, \$0.16; '03, (\$0.23); '04, \$0.53. historically paid in February, May, August, and '97 (years end 9/30); new KeySpan Corp. from Excl. gain (loss) discont. ops.: '00, (\$0.02); '01, November. ■ Div'd reinvestment plan available. '98 on a calendar-year basis.(B) Diluted shs. (\$0.14); '02, (\$0.14); '03, \$0.01; '04, \$0.94. (D) Includes deferred charges. At 12/31/03: Excl. nonrecur. gains (charges): '90, (\$0.19); Next egs. report due late April. (C) Dividends \$19.40 /sh. (E) In millions, adjusted for split.

Company's Financial Strength Stock's Price Stability R++ **Price Growth Persistence** 50 **Earnings Predictability**

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2004 332.6 475.0 245.1 197.6 1250.3 442.5 2005 212.5 515 260 1430 490 1630 2006 560 305 275 Fiscal Year Ends EARNINGS PER SHARE ABF Dec.31 Mar.31 Jun.30 Sep.30 2002 1.10 d.05 d.28 1.18 .80 2003 1.14 .11 d.21 1.82 1.12 1.82 .87 2004 .19 d.28 2005 .79 1.15 .21 d.30 1.85 2006 .20 .85 d.25 1.15 QUARTERLY DIVIDENDS PAID C . Cal-Full endar Mar.31 Jun.30 Sep.30 Dec.31 Year 2001 .335 .335 .335 2002 .335 .335 335 .335 1.34 2003 .335 .335 .335 .335 2004 .335.34 .34 .34 2005

mitigation rate design offset this somewhat). Also, results here were dampened by lower income from off-system sales and capacity release, plus heightened operating expenses. On the positive side, the nonutility gas marketing unit, Laclede Energy Resources, enjoyed increased volumes and higher margins achieved in a favorable market. Also, earnings for SM&P Utility Resources (an underground facility locating firm) were boosted by the return of a substantial portion of business from two customers and expansion into new and existing markets. In spite of this, we believe that consolidated 2005 share net will

just approximate last year's figure. Our tentative 2006 figure of \$.95 a share as-

2006. Note that our presentation will reflect the rate increase once approval has been granted.

Income-oriented investors may find the current dividend appealing. But additional hikes in the payout could be slow in coming, since Laclede Gas' service territory is in a mature phase.

The stock's long-term total-return potential is limited. That's because these shares are already trading within the 2008-2010 Target Price Range, and we're assuming that future dividend growth is moderate. What's more, the equity is ranked to underperform the yearahead market. March 18, 2005

Frederick L. Harris, III

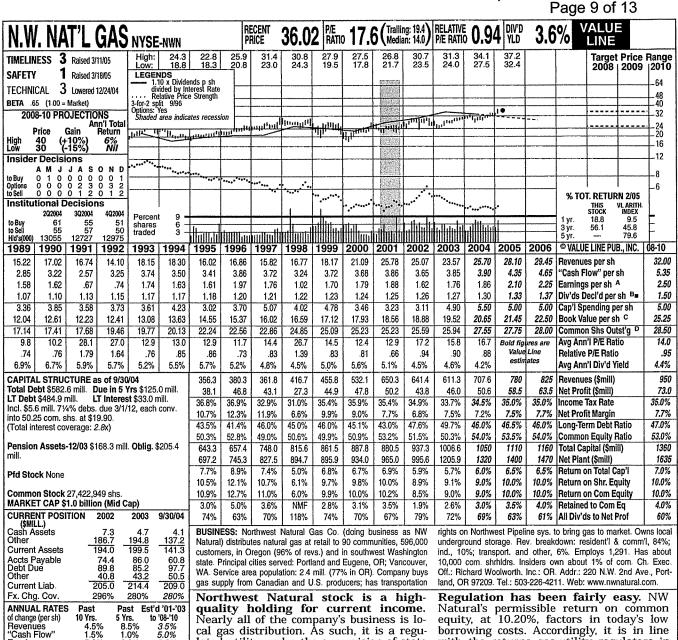
(A) Fiscal year ends Sept 30th.
(B) Based on average shares outstanding thru.

[,] then diluted. Next earnings report due late April.

⁽C) Dividends historically paid in early January, \$9.85/sh. April, July, and October. ■ Dividend reinvestment plan available. (F) Qtly.

⁽E) In millions. Adjusted for stock split. (F) Qtly. egs. may not sum due to change in (D) Incl. deferred charges. In '04: \$206.6 mill., shares outstanding.

Company's Financial Strength Stock's Price Stability 100 Price Growth Persistence **Earnings Predictability**



ANNUAL RATES	Past	Past	Est'd '01-'03	
Others	Others	Others	Others	Others
Others	Others	Others	Others	
Others				
Others	Others			

Cal- endar	QUAR Mar.31		VENUES (Sep.30		Full Year
2002	278.6	101.9	78.7	182.2	641.4
2003	206.5	117.5	69.5	217.8	611.3
2004	254.5	109.7	81.4	262.0	707.6
2005	280	125	90.0	285	780
2006	300	130	95.0	300	825
Cal-	EA	RNINGS P	ER SHARI	Dec.31	Full
endar	Mar.31	Jun.30	Sep.30		Year
2002	1.32	d.13	d.26	.69	1.62
2003	1.01	.17	d.25	.83	1.76
2004	1.24	d.03	d.30	.95	1.86
2005	1.26	.15	d.31	1.00	2.10
2006	1.30	.17	d.29	1.07	2.25
Cal- endar	QUART Mar.31		IDENDS PA		Full Year
2001 2002 2003 2004 2005	.31 .315 .315 .325 .325	.31 .315 .315 .325	.31 .315 .315 .325	.315 .315 .325 .325	1.25 1.26 1.27 1.30

lated utility under the supervision of state overseers in Oregon and Washington. Importantly, though, NW Natural is a financially secure utility, whose growth is nurtured by the Pacific Northwest's diverse and expanding economy. Too, the company's selling effort is made easier by gas prices that are competitive with alternate fuels and power. In regulatory matters, NW Natural, since 2003, has been favored with a new rate design, which should help to keep earnings on a fairly stable uptrend in the coming years. The outcome should be wider coverage of the dividend, allowing the payout to grow a little faster than it has in the past. On that score, it seems, shares have Natural attracted stronger support. Though the issue's recent price reduces the current dividend yield to a level that's moderately below the gas-utility average, the prospect of more generous dividend hikes should mean an improved one-year total return to make up for much of the current yield deficit.

with the returns gas-utility regulators in most other states allow their charges. But NW Natural's rate design includes some generous features. A wider profit margin is set for the winter heating season and more than offsets the effect of a lower margin during the summer months when demand tends to be low. The rates also include a weather normalization tariff to negate the effects of year-to-year winter temperature swings on profits. In all, the new rate structure should afford management a more predictable cash flow for financial planning. Notably, too, NW Natural may earn above its benchmark return by achieving certain cost savings. And nonregulated business, chiefly gas storage service to nonaffiliated pipelines, should contribute a little to earnings in the coming years. As with all utility stocks, NW Natural is interest rate-sensitive; a run-up in money costs will likely weigh heavily on the price of these shares.

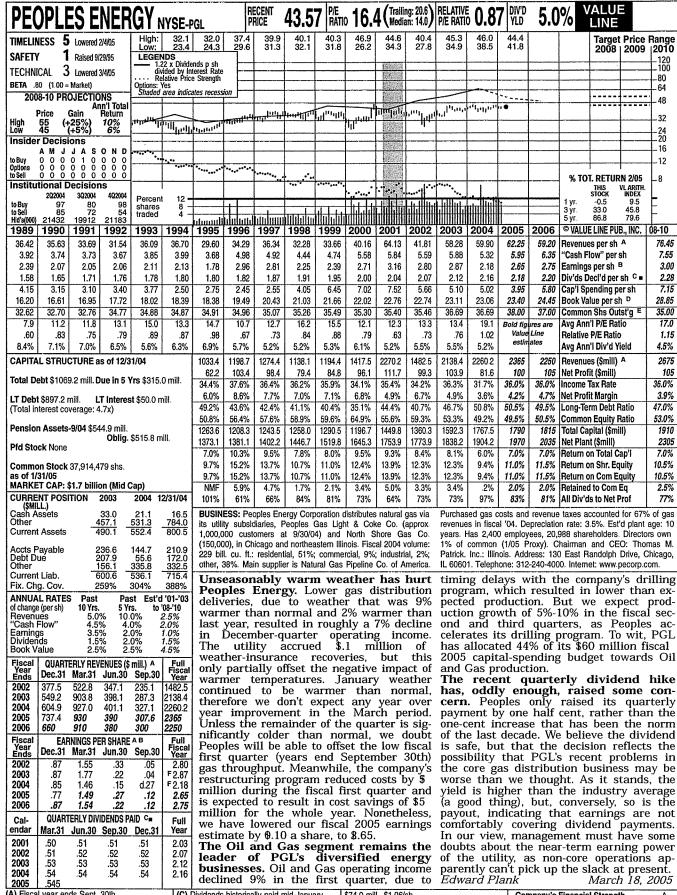
Gerald Holtzman March 18, 2005

(A) Diluted earnings per share. Excludes non-recurring gain: '98, \$0.15; '00, \$0.11. Next earnings report due late April.
(B) Dividends historically paid in mid-February,

mid-May, mid-August, and mid-November.

Div'd reinvestment plan available.
(C) Includes intangibles. At 12/31/03: \$6.66/sh.
(D) In millions, adjusted for stock split.

Company's Financial Strength A Stock's Price Stability 100 Price Growth Persistence 40 Earnings Predictability 65



Company's Financial Strength Stock's Price Stability Price Growth Persistence Earnings Predictability

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(A) Fiscal year ends Sept. 30th.

(B) Basic earnings per share. Excludes acct'g gains/(losses): '89, \$0.30; '99, \$0.22; '00, (\$0.27). Next earnings report due late April.

(C) Dividends historically paid mid-January, April, July, October. ■ Dividend reinvestment plan available.

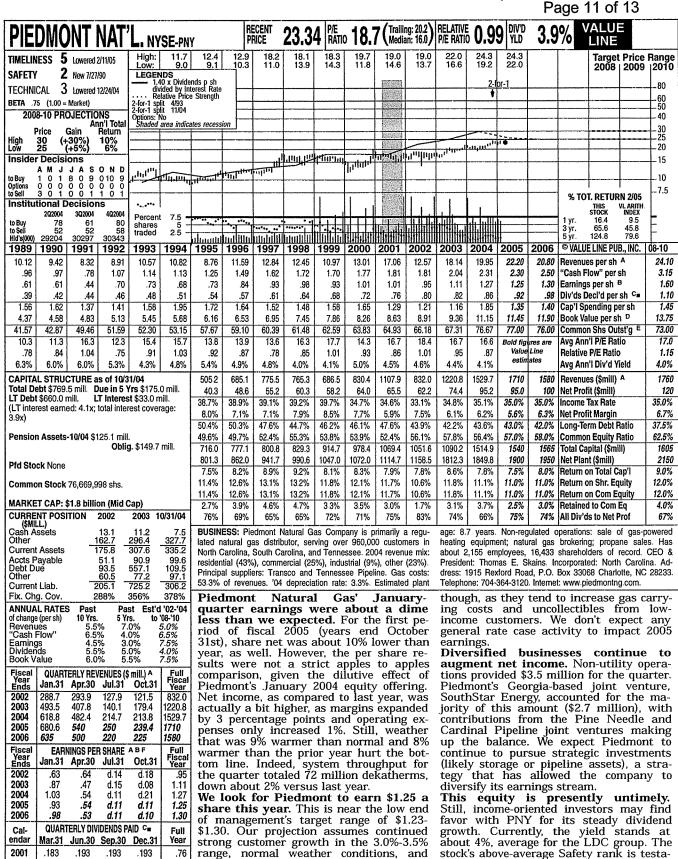
(B) Includes deferred charges. At 9/30/04:

(C) Dividends historically paid mid-January, April, July, October. ■ Dividend reinvestment plan available.

(E) In millions.

(F) Earnings don't sum due to change in shares outstanding.

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⁽A) Fiscal year ends October 31st.
(B) Diluted earnings. Excl. extraordinary item:
'00, 8¢. Excl. nonrecurring charge: '97, 2¢.
Next earnings report due late-May.

.20

.208

.215

20

.208

.215

.20

.215

.80

2002

2003

2004

2006

.20

.208

.215

.23

wholesale natural gas prices similar to those that held through fiscal 2004. High-

er gas prices are not always a good thing

for local distribution companies like PNY,

ment to the company's stable finances,

strong demographic base in the Southeast,

and solid management team.

Edward Plank

March 18, 2005

 ⁽C) Dividends historically paid mid-January,
 April, July, October.
 Div'd reinvest, plan available; 5% discount.

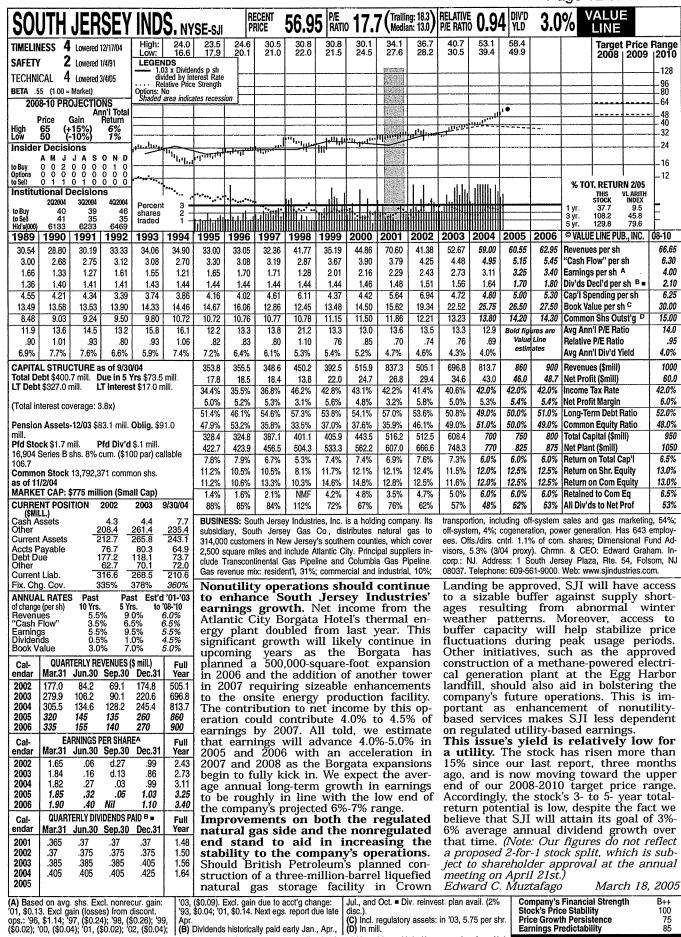
Div'd reinvest. plan available; 5% discount
 (D) Includes deferred charges At 10/31/04:

^{\$5.3} million, 7¢/share.

(E) In millions, adjusted for stock split.

(F) Quarters may not add to total due to change in shares outstanding.

Company's Financial Strength Stock's Price Stability 1000
Price Growth Persistence 80
Earnings Predictability 80

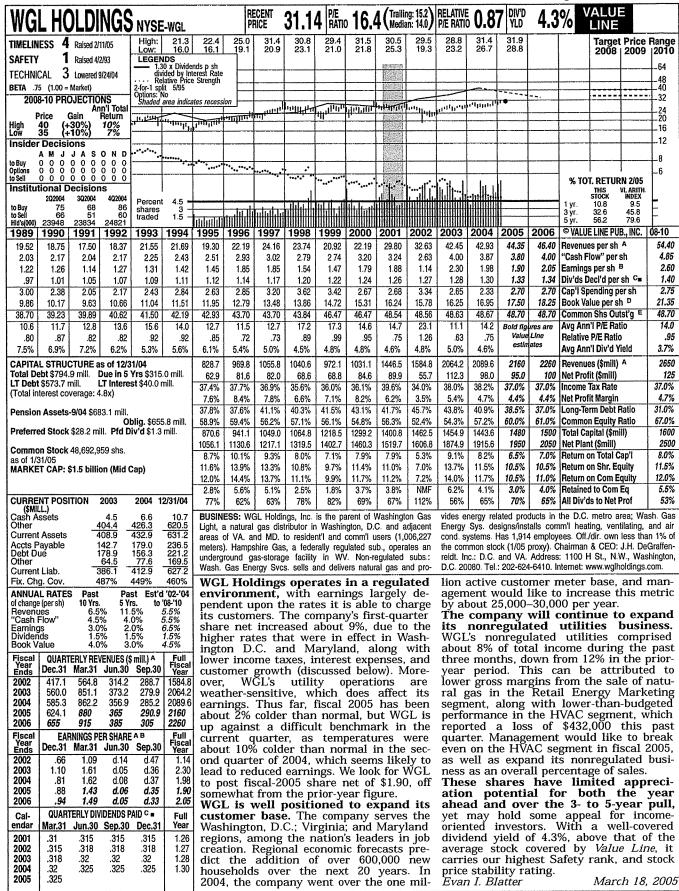


(A) Based on avg. shs. Excl. nonrecur. gain: '01, \$0.13. Excl gain (losses) from discont. ops.: '96, \$1.14; '97, (\$0.24); '98, (\$0.26); '99, (\$0.02); '00, (\$0.04); '01, (\$0.02); '02, (\$0.04);

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Stock's Price Stability Price Growth Persistence 100 **Earnings Predictability** 85

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(A) Beginning 1989, fiscal years end Sept. 30th. (B) Based on diluted shares. Excludes nonrecurring losses: '01, (13¢); '02, (34¢). Next earnings report due late April.

(C) Dividends historically paid early February, 104: \$156.5 million, \$3 22/sh. (E) In millions, May, August, and November. • Dividend reinadjusted for stock split. vestment plan available. (D) Includes deferred charges and intangibles.

Company's Financial Strength Stock's Price Stability Price Growth Persistence 100 70 60 **Earnings Predictability**

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Witness Responding: Dr. J. Randall Woolridge

27. Provide a list of the companies represented in the Dow Jones Utilities Index and provide the percentage of total revenues provided by gas utility revenues. **Response:**

The companies include:

American Electric Power

AES Corp.

CenterPoint

Consolidated Edison

Dominion Resources

Duke Energy

Edison International

Exelton

First Energy

NiSource

PGE

Public Service Enterprises

Southern Co.

TXU Corp

Williams Company

Dr. Woolridge is unaware of the percentage of revenues from gas. The analysis performed in the testimony did not pertain to gas revenues.

Witness Responding: Dr. J. Randall Woolridge

- 28. Refer to the Woolridge Direct Testimony, page 3 and Exhibit JRW-5.
 - a. Provide a table with the Market to Book and the Return on Equity ("ROE") values used to produce the graph in the exhibit.
 - b. Provide further explanation of how the graph supports the statements on lines 5-6 and lines 9-11 on page 12 of the testimony.

Response:

a. The data comes from Value Line and is listed below:

		Market-
	ROE	to-Book
1991	11.80%	128.80%
1992	11.00%	138.60%
1993	12.15%	165.88%
1994	12.20%	127.96%
1995	12.20%	136.48%
1996	11.70%	135.16%
1997	11.00%	137.50%
1998	11.80%	170.28%
1999	12.00%	175.44%
2000	11.65%	141.80%
2001	13.45%	183.01%
2002	13.30%	160.16%
2003	12.40%	141.47%
2004	10.75%	149.00%
1996 1997 1998 1999 2000 2001 2002 2003	11.70% 11.00% 11.80% 12.00% 11.65% 13.45% 13.30%	135.16% 137.50% 170.28% 175.44% 141.80% 183.01% 160.16%

b. Exhibit_(JRW-5) provides data that supports the capital cosst have declined over the past decade and, since market-to-book ratios have consistently been above 1.0, these utilities have earned returns on equity above their cosst of equity.

Witness Responding: Dr. J. Randall Woolridge

29. Refer to the Woolridge Direct Testimony, Exhibit JRW-5, page 3 of 3. Provide a table that contains the Market to Book and ROE values for the 11 companies in Dr. Woolridge's proxy group. Use the same format as in the table provided in response to the preceding question regarding the Dow Jones Utilities graph in the Exhibit.

Response:

a. The current return on equity and market-to-book ratios for the eleven companies in the proxy group are provided on page 1 of Exhibit_(JRW-3)

Witness Responding: Dr. J. Randall Woolridge

30. Refer to the Woolridge Direct Testimony, pages 15 and 16. Provide a detailed explanation of why a risk premium study, of which the Capital Asset Pricing Model is one form, provides less reliable estimates of ROE than other types of studies.

Response:

Two reasons. First, as discussed on page 18 of the testimony, since utilities are viewed as being in the maturity stage of the DCF with relatively stable growth, the components of the DCF model can be estimated, in my opinion, with more confidence. Second, there is a debate concerning how to measure an equity risk premium – and along with this debate – there are large differences in estimated equity risk premiums.

Witness Responding: Dr. J. Randall Woolridge

31. Refer to the Woolridge Direct Testimony, page 21, lines 5-6 and lines 16-17. Provide documentation and any official guidelines used by analysts that direct and instruct how to adjust dividend yields.

Response:

a. Provided on the CD as PSC-I-31 is the testimony of Gordon and Gould that discusses the issue.

	•	

Witness Responding: Dr. J. Randall Woolridge

- 32. Refer to the Woolridge Direct Testimony, page 24.
 - a. Identify the companies that represent outliers in the data sets.
 - b. Explain why each of the outliers should not be eliminated from the proxy group.
 - c. Explain how averaging the median value with the mean eliminates the effect of outliers in the data.

Response:

- a. On page 3 of Exhibit_(JRW-7), some of the individual historic growth rate numbers (not the companies themselves) are well above or below the norms for the group. These outliers would include the following: AGL (5-year EPS growth), Keyspan (5-year EPS growth), South Jersey (5-year EPS growth).
- b. Using the median is a common way to include these observations in the sample but not allow them to distort the measure of central tendency.
- c. The median mitigates the effect of the outliers, I have then averaged the mean and median figures to get a good sense of the overall central tendency of the figures.

BEFORE THE PEDERAL COMMUNICATIONS COMMISSION

IN THE MATTER OF

AMERICAN TELEFUOYD AND TELOGRAPH CONTANT) CC DOCKET NO! 11=01

PETITION FOR MODIFICATION OF PRESCRIBED RATE OF RETURN

PREPARED DIRECT TESTIMONY

OF

DR. MYRON J. GORDON

AND

DR. LAWRENCE I. GOULD

APRIL. 1980

III. COST OF EQUITY CAPITAL

(

It is widely accepted that a public utility should earn a return on capital that allows it to raise the capital necessary to meet the demand for its services without an adverse effect on cuffent shafeholder stock. Such a rate of return is called the utility's cost of capital. A return in excess of that rate burdens the consumer with prices which are excessive and causes an unjustified transfer of income from the consuming public to the shareholders of the utility. It also encourages the utility to increase costs and prices further by overinvesting in plant facilities. On the other hand, a return on capital below the required return may discourage the unility from raising sufficient capital to meet demands for service, causing consumers to suffer an impairment in the quantity and quality of service. Therefore, if the return allowed by the Commission is either too high or too low, the result is less than satisfactory to the consumer. The testimony which follows is offered with a view to estimating as closely as possible the actual required return on capital (also called the cost of capital) and, with some care, to avoiding any bias in either direction.

In measuring the cost of capital from each source, the cost of debt and the cost of preferred capital pose few problems. It is clear that the utility must pay the

Response to PSC-1-32a Page 3 of 21

embedded interest on its outstanding debt and the prescribed dividend on the preferred stock. Both of these measurements involve perfectly straightforward calculations.

Somewhat more controversial is the problem of determining the cost of common equity capital.

A. General Principles

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A utility's cost of common equity capital is the return or yield that investors on average require on its common stock as implied in the price that they are willing to pay to hold the stock. This implied yield is the cost of common equity capital, because the existing shareholders neither gain nor lose as a consequence of additional investment and financing, regardless of the method of financing, as long as the return the company earns on its common equity is equal to the return investors require the stock. By contrast, when the allowed return on common is above the return investors require, each dollar of additional financing raises the value of the existing shares. Conversely, when the utility's operating income less interest on debt, income taxes, and preferred dividends does not leave a return on common equity equal to the return investors require on the stock, we not only have a depressed stock price because of the low return, but, in addition, each dollar of additional investment and financing